

TubeWeld 110

Longer laterals and increasingly aggressive drilling practices continue to take a toll on work string tubing. TubeBanding® with Duraband®NC has significantly increased the life of tubing by reducing tube connection OD loss. Now that we can protect tubing connections, it's time to focus on restoration of upset connections that were once considered scrap by re-building them with TubeWeld 110. Designed specifically for the rebuilding of work string upset connections, Postalloy® TubeWeld 110, provides specific metallurgical properties and weldability under unique conditions. This combination of carefully controlled heat, tight welding parameters and patent-pending welding procedure, significantly reduces the possibility of burning through the original metal. Once the weld has been properly applied, the weld material is machined to the connection's originally specified diameter and the threads are re-cut.



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procedure and to arrange
training.**

TubeWeld 110 build-up after
Machining and Connection
Re-cutting

Work String Build-up Restoration Process (Patent Pending) Frequently Asked Questions (FAQ's)

Q: What is the purpose of the work string connection build-up restoration process?

A: This process offers the ability to restore work string tubes that would otherwise be disposed of due to upset connection outside diameter (OD) loss.

Q: What is the minimum thickness of tube upset connection that can be built up?

A: We have determined that the minimum tube thickness that we are able to weld the build-up alloy material upon is 1/16" (0.062") as measured at the edge of the box end of the upset.

Q: How is the build-up restoration welding process performed on upset tube connections as thin as 1/16" (.062)?

A: Utilizing a specific Postalloy®Tube-Weld 110 .045 build-up wire and a low heat input welding process (patent pending), the heat generated during the application is kept to a minimum and therefore more conducive to welding on thinner materials.

Q: Does the heat generated by the welding process adversely affect the upset tube joint?

A: The tube is not adversely effected. The area affected by the welding process, or Heat Affected Zone (HAZ), is kept to a minimum because of the low amount of heat generated during welding process. Metallurgical analysis of the tube material, after the welding process, indicates that the hardness profile has not been significantly changed.

Q: Should I be concerned about the threads of the upset connection being altered because of the build-up welding process?

A: The thread area is not altered. The build-up restoration procedures call for rebuilding the upset joint to its original outside diameter, cutting off approximately 1" of the original

threaded end, and re-cutting the threads. The new threads do not come into contact with the heat affected zone and therefore are sound and not vulnerable to changes in notch toughness that might be created by the welding process.

Q: Should I be concerned about the strength of the upset connection being altered because of the build-up welding process?

A: Restored P110 box connections have been tested in a make-up testing apparatus and results indicate the rebuilt connections will perform better than new. New box end connections were also tested. Restored and new connections were subjected to the equipment's full capacity. New pin connections were used to create the joint. At the equipment's maximum torque the new box ruptured and the testing equipment proceeded to deform the tube body, however, the restored box did not rupture and the box experienced slipping in the jaw that held the coupling. The results of this testing suggest that there was a positive reinforcement of the restored box over a new box.

Q: Is it required to preheat the tube joint prior to welding or control the cooling process after?

A: The entire tube upset connection area must be preheated to 100°F (38°C) prior to welding. Interpass temperatures should never exceed 800° (427°C). After welding, the cooling rate should be no more than 100°F/hour.

Q: Can the build-up restoration process be repeated after subsequent wear to the tube connection?

A: It is preferred to apply hardbanding to the upset tube connection to protect it from wear following the tube build-up restoration process. The build-up process can be repeated if needed.